UNITED STATES PATENT AND TRADEMARK OFFICE

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10/813,154	03/30/2004	Lutz Raddatz	Raddatz 1	5417

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EXAMINER
LE, THI Q

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/813,154	RADDATZ, LUTZ
Office Action Summary	Examiner	Art Unit	
	Thi Q. Le	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on <u>08 March 2007</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-11</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-11</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>08 March 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   The information disclosure statement (IDS) filed on 3/30/2004 was considered by the

examiner.

Drawings

1.   The drawings are objected to because in **Figure 2, the word "RESIDIUAL" is**

incorrectly spelled. Replace it with "RESIDUAL". Corrected drawing sheets in compliance

with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures appearing

on the immediate prior version of the sheet, even if only one figure is being amended. The figure

or figure number of an amended drawing should not be labeled as "amended." If a drawing

figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and

where necessary, the remaining figures must be renumbered and appropriate changes made to the

brief description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as either

"Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective

action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
        or nonobviousness.

4.   **Claims 1-9** rejected under 35 U.S.C. 103(a) as being unpatentable over **Nishimoto et al.**

(US PGPub 2002/0089724 A1).

Consider **claim 1**, Nishimoto et al. clearly show and disclose, a method for measuring

residual chromatic dispersion in an optical transmission system, the method comprising the steps

of: introducing a predetermined amount of chromatic dispersion at the receive end of the system

(read as, the variable dispersion compensator 10 performing wavelength dispersion

compensation; figure 1, paragraph 0052); measuring a bit error rate for the system corresponding

to the predetermined amount of chromatic dispersion (read as, the bit error information

mentoring circuit 12 measures the bit error rate of the received data; paragraph 0054); iterating

the introducing and measuring steps until the bit error rate is a minimum over all measured bit

error rates (read as, the controlling circuit 13 causes the variable dispersion compensator 10 to

change the wavelength dispersion compensation value within a preset range to determine the

optimize values for minimizing the bit error rate; paragraph 0065); wherein the residual

chromatic dispersion in the optical transmission system is represented by a complement of the

predetermined amount of chromatic dispersion at which the minimum bit error rate is achieved

(figure 5 show the graph of wavelength dispersion compensation value versus bit error rate;

paragraph 0066). Nishimoto discloses the claimed invention except for wherein the measured

BER represents chromatic dispersion only.

It would have been obvious for a person of ordinary skill in the art at the time of the

invention was made to modify the dispersion compensation apparatus disclosed by Nishimoto,

such that, wavelength dispersion is perform separately from polarization dispersion; thus the

measured BER value represents separately a value for wavelength dispersion (i.e. chromatic

dispersion) and a value for polarization dispersion. Since it has been held that constructing a

formerly integral structure in various elements involves only routine skill in the art, Nerwin v.

Erlichman, 168 USPQ 177, 1 t.

Further, Nishimoto disclosed that conventional art use for dispersion compensation

comprises of two different circuits, one for wavelength dispersion compensation (i.e. chromatic

dispersion compensation) and another one for polarization dispersion compensation (paragraph

0006).

Consider **claim 2, and as applied to claim 1 above**, Nishimoto et al. further disclose, the

step of iterating is responsive to the bit error rate in the measuring step and includes selecting a

new predetermined amount of chromatic dispersion for the introducing step (read as, the

controlling circuit 13 received the bit error rate information and causes the variable dispersion

compensator 10 to change the wavelength dispersion compensation value in a direction

corresponding to minimizing the bit error rate) (figure 1 and 5 paragraph 0068).

Consider **claim 3, and as applied to claim 2 above**, Nishimoto et al. further disclose, the

step of selecting further includes controlling selection of the predetermined amount of chromatic

dispersion in a manner to produce a minimum bit error rate (read as, the controlling circuit 13

received the bit error rate information and causes the variable dispersion compensator 10 to

change the wavelength dispersion compensation value in a direction corresponding to

minimizing the bit error rate) (figure 1 and 5 paragraph 0068).

Consider **claim 4, and as applied to claim 1 above**, Nishimoto et al. further disclose, the

step of compensating at least some portion of the residual chromatic dispersion in the optical

transmission system by selecting a compensating amount from a chromatic dispersion range

including 0 ps/nm through and including the predetermined amount of chromatic dispersion at

which the minimum bit error rate was achieved (read as, the controlling circuit 13 causes the

variable dispersion compensator 10 to change the wavelength dispersion compensation value

within a preset range (wherein, the range can be set to any value) to determine the optimize

values for minimizing the bit error rate; paragraph 0065) (figure 1 and 5, paragraph 0065-0068).

Consider **claim 5, and as applied to claim 4 above**, Nishimoto et al. further disclose, the

step of iterating is responsive to the bit error rate in the measuring step and includes selecting a

new predetermined amount of chromatic dispersion for the introducing step (read as, the

controlling circuit 13 received the bit error rate information and causes the variable dispersion

compensator 10 to change the wavelength dispersion compensation value in a direction

corresponding to minimizing the bit error rate) (figure 1 and 5 paragraph 0068).

Consider **claim 6, and as applied to claim 5 above**, Nishimoto et al. further disclose, the

step of selecting further includes controlling selection of the predetermined amount of chromatic

dispersion in a manner to produce a minimum bit error rate (read as, the controlling circuit 13

received the bit error rate information and causes the variable dispersion compensator 10 to

change the wavelength dispersion compensation value in a direction corresponding to

minimizing the bit error rate) (figure 1 and 5 paragraph 0068).

Consider **claim 7**, Nishimoto et al. clearly show and disclose, an apparatus for measuring

residual chromatic dispersion in an optical transmission system, the apparatus comprising: a

dispersion compensator for introducing a predetermined amount of chromatic dispersion at the

receive end of the system (read as, the variable dispersion compensator 10 performing

wavelength dispersion compensation; figure 1, paragraph 0052); a bit error rate, test element for

measuring a bit error rate for the system corresponding to the predetermined amount of

chromatic dispersion (read as, the bit error information mentoring circuit 12 measures the bit

error rate of the received data; figure1, paragraph 0054); a control element coupled to said

compensator and said test element for adjusting said compensator to a new predetermined

amount of chromatic dispersion in order to reduce the bit error rate for the system (read as, a

controlling circuit 13 controlling the wavelength dispersion compensation value based on the bit

error rate information in-order to reduce the bit error rate; figure 1; paragraphs 0056 and 0068);

wherein at least a portion of the residual chromatic dispersion in the optical transmission system

is represented by a complement of the predetermined amount of chromatic dispersion at which

the reduced bit error rate was achieved (figure 5 show the graph of wavelength dispersion

compensation value versus bit error rate; paragraph 0066).

Consider **claim 8, and as applied to claim 7 above**, Nishimoto et al. further disclose, the

control element adjusts the compensator to a new predetermined amount of chromatic dispersion

in order to minimize the bit error rate for the system, the residual chromatic dispersion in the

optical transmission system being represented by a complement of the predetermined amount of

chromatic dispersion at which a minimum bit error rate is achieved (read as, the controlling

circuit 13 received the bit error rate information and causes the variable dispersion compensator

10 to change the wavelength dispersion compensation value in a direction corresponding to

minimizing the bit error rate) (figure 1 and 5 paragraphs 0065-0068).

Consider **claim 9, and as applied to claim 8 above**, Nishimoto et al. further disclose, the

control element adjusts the dispersion compensator to a compensating amount of chromatic

dispersion selected from a chromatic dispersion range including 0 ps/nm through and including

the predetermined amount of chromatic dispersion at which the minimum bit error rate was

achieved (read as, the controlling circuit 13 causes the variable dispersion compensator 10 to

change the wavelength dispersion compensation value within a preset range (wherein, the range

can be set to any value) to determine the optimize values for minimizing the bit error rate;

paragraph 0065) (figure 1 and 5, paragraph 0065-0068).

5.   **Claims 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nishimoto**

et al. (US PGPub 2002/0089724 A1) in view of **Tanaka et al. (US PGPub 20020131711)**.

Consider **claim 10**, Nishimoto et al. disclose, apparatus for measuring residual chromatic

dispersion in an optical transmission system, the apparatus comprising: a dispersion compensator

for introducing a predetermined amount of chromatic dispersion to an optical signal (read as,

variable dispersion compensator 10, wherein wavelength dispersion (i.e. chromatic dispersion)

and polarization dispersion are compensated for; figure 1, paragraph 0052); an optical receiver

for receiving the optical signal comprising the predetermined amount of chromatic dispersion

(read as, optical receiving circuit 11 receives the optical signal output from the variable

dispersion compensator 10; figure 1, paragraph 0053); a bit error rate test element for receiving

at least a portion of a signal output from the optical receiver and measuring a bit error rate for the

system corresponding to the predetermined amount of chromatic dispersion (read as, bit error

information monitoring circuit 12 measures a bit error rate concerning the receive-data signal

from the optical receiving circuit 11; figure 1 paragraph 0054); a control element coupled to the

compensator and the test element for iteratively adjusting the compensator to a new

predetermined amount of chromatic dispersion until the bit error rate test element measures a

minimum bit error rate (read as, controlling circuit 13 automatically control the compensation

amount at the variable dispersion compensator 10 based on the bit error information; figure 1

paragraph 0056); wherein the residual chromatic dispersion in the optical transmission system is

represented by a complement of the predetermined amount of chromatic dispersion at which the

minimum bit error rate is achieved (referring to figure 5, the point at which bit error rate is at the

minimum represents the wavelength dispersion value of the variable dispersion compensator

used to achieves optimum dispersion compensation; figure 5, paragraph 0066). Nishimoto fails

to disclose, the apparatus for measuring residual chromatic dispersion is place at an intermediate

location in an optical transmission system.

In related art, Tanaka discloses an optical transmission system with dispersion

compensation optical line. Wherein, dispersion compensators 24 are place at intermediate

locations on transmission line 12, for compensating accumulated chromatic dispersion (read as,

the apparatus for measuring residual chromatic dispersion is place at an intermediate location in

an optical transmission system.) (figure 1, paragraphs 0015-0016, 0027, 0029).

It would have been obvious for a person of ordinary skill in the art at the time of the

invention to incorporate the teachings of Tanaka with Nishimoto. Because placing dispersion

compensator at intermediate location along optical transmission line allow for transmission of

high bit rate optical signal over longer transmission distance.

Consider **claim 11**, Nishimoto et al. disclose, a method for measuring residual chromatic

dispersion in an optical transmission system, the method comprising: introducing a

predetermined amount of chromatic dispersion to an optical signal using a dispersion

compensator (read as, variable dispersion compensator 10, compensate for wavelength

dispersion (i.e. chromatic dispersion) and polarization dispersion; figure 1, paragraph 0052);

directing the optical signal comprising the predetermined amount of chromatic dispersion to an

optical receiver (read as, optical receiving circuit 11 receives the optical signal output from the

variable dispersion compensator 10; figure 1, paragraph 0053); directing at least a portion of a

signal output from the optical receiver to a bit error rate test element (read as, output from optical

receiving circuit 11 is sent to bit error information monitoring circuit 12; figure 1 paragraph

0054); measuring a bit error rate corresponding to the predetermined amount of chromatic

dispersion using the bit error rate test element (read as, bit error information monitoring circuit

12 measures a bit error rate concerning the receive-data signal from the optical receiving circuit

11; figure 1 paragraph 0054); iteratively adjusting the compensator to introduce a new

predetermined amount of chromatic dispersion and measuring the bit error rate until a minimum

bit error rate is achieved (read as, controlling circuit 13 automatically control the compensation amount at the variable dispersion compensator 10 based on the bit error information; figure 1 paragraph 0056); wherein the residual chromatic dispersion in the optical transmission system is represented by a complement of the predetermined amount of chromatic dispersion at which the minimum bit error rate is achieved (referring to figure 5, the point at which bit error rate is at the minimum represents the wavelength dispersion value of the variable dispersion compensator used to achieves optimum dispersion compensation; figure 5, paragraph 0066). Nishimoto fails to disclose, the apparatus for measuring residual chromatic dispersion is place at an intermediate location in an optical transmission system.

In related art, Tanaka discloses an optical transmission system with dispersion compensation optical line. Wherein, dispersion compensators 24 are place at intermediate locations on transmission line 12, for compensating accumulated chromatic dispersion (read as, the apparatus for measuring residual chromatic dispersion is place at an intermediate location in an optical transmission system.) (figure 1, paragraphs 0015-0016, 0027, 0029).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Tanaka with Nishimoto. Because placing dispersion compensator at intermediate location along optical transmission line allow for transmission of high bit rate optical signal over longer transmission distance.

Response to Arguments

6.   Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7.   Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

>   Commissioner for Patents
>   P.O. Box 1450
>   Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

>   Customer Service Window
>   Randolph Building
>   401 Dulany Street
>   Alexandria, VA 22314

8.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Thi Le whose telephone number is (571) 270-1104. The

Examiner can normally be reached on Monday-Friday from 7:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's

supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Thi Le

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER